CLAIMS

What is claimed is:

1. An alloy for use in manufacturing medical, surgical, microsurgical and electrosurgical instruments comprising:
   - from 0.01% to 20% by weight of germanium; from 0% to 25% by weight relative to the germanium of at least one of a non-hydrogenic and shallow hydrogenic acceptor dopant; up to 20% by weight of one or more of the compounds selected from the group consisting of platinum, gold, palladium, iridium, ruthenium, osmium, rhodium, niobium, tantalum, tungsten, aluminium, silicon, zirconium, rare earth elements including hafnium, yttrium and lanthanum; and as a remainder up to 100% by total weight constituted by silver.

2. The alloy of claim 1, wherein the germanium content is less than 14.4% by weight.

3. The alloy of claim 2, wherein the germanium content is at least 0.01% by weight.

4. The alloy of claim 1, wherein the alloy has a hardness in the range from 80 to 100 HVN.

5. The alloy of claim 4, wherein the hardness is in the range of 40 to 149 HVN.

6. The alloy of claim 1, wherein the acceptor dopant is one selected from the group of Group I, Group II and to Group III of the Periodic Table of the Elements.

7. The alloy of claim 1, wherein the p-type germanium is dispersed in the form of microcrystals in a matrix of the silver.

8. The alloy of claim 1, wherein the non-hydrogenic and the hydrogenic acceptor dopants are selected from the group consisting at least one of gold, platinum, copper, gallium, indium, zinc, boron and their alloys.

9. The alloy of claim 8, wherein the non-hydrogenic acceptor dopant is at least one of gold and copper.

10. The alloy of claim 1, wherein the weight ratio of the acceptor dopant relative to the germanium is less than 15%.

11. The alloy of claim 10, wherein the weight ratio of the acceptor dopant relative to germanium is at least 5%.

12. The alloy of claim 1, wherein the germanium is present in the form of p-type germanium microcrystals dispersed in a matrix of the alloy and capable of emitting far infrared radiation in the electromagnetic spectrum with a frequency range from 0.1 to 4 THz.

13. The alloy of claim 12, wherein the p-type germanium microcrystals dispersed in the alloy matrix are capable of stimulation to an emission of far infrared radiation from a source of energy.

14. The alloy of claim 13, wherein the energy is selected from the group consisting of sources of thermal energy, electro-thermal radiofrequency, body heat, ultrasound, microwave energy, laser energy, solar energy, DC current, AC current, biological energy, chemical energy.

15. The alloy of claim 1, wherein the alloy is resistant to processes selected from the group consisting of sulfurization, corrosion and oxidation.

16. The alloy of claim 1, having a hardness of HVN from 32 to 203 or more depending on the use thereof.

17. The alloy of claim 1, wherein the alloy is capable of emitting anions.

18. The alloy of claim 1, wherein the alloy possesses fractal surfaces.

19. The alloy of claim 1, wherein the germanium containing alloy exhibits a thermal conductivity above 0.35 W/cm K. degrees.

20. A medical instrument for use in surgical procedures made from an alloy of claim 1, wherein the instrument is coated partially or completely with one or more of a material selected from the group consisting of biocompatible, insulating, semi-insulating compounds and ceramic materials.

21. The instrument of claim 20, wherein the said one or more material is laminated over a core material of the instrument.

22. The instrument of claim 20, wherein the instrument is produced by conventional fusion methods.

23. The instrument of claim 20, wherein medical instruments includes devices selected from the group of prostheses and implants of suitable shape and size.

24. The instrument of claim 20, capable of emitting far infrared radiation upon contact with a biological tissue and which is capable of entering into molecular resonance vibration with bio structures and physical structures of so irradiated biological tissue.

25. The instrument of claim 20, capable of creating an ohmic contact in an electrode-tissue interface during electrosurgical operative modes.

26. A process for producing an alloy from compounds suitable for medical instruments comprising the steps of:

- preparing a mixture from silver in the amount of up to 100% total weight together with from 0.01% to 20% by weight of germanium; at least one of a non-hydrogenic and shallow hydrogenic acceptor dopant from 0% to 25% by weight relative to the germanium; up to 20% by weight of one or more of the compounds selected from the group consisting of platinum, gold, palladium, iridium, ruthenium, osmium, rhodium, niobium, tantalum, tungsten, aluminium, silicon, hafnium, yttrium, lanthanum, zirconium;
- melting the mixture in a high frequency induction furnace using argon gas to form a melt of alloy;
- casting the melt to form ingots of desired sizes; solution annealing and quenching the alloy at a temperature ranging from 450 C to 800 C for a period of time between about 0.5 hours to about 6 hours; and
- age hardening by heating the alloy at a temperature ranging from 150 C-380 C for a period of time between 0.5 hour to 24 hours resulting in said alloy having a hardness in the range between 32 HVN to 203 HVN depending on the respective amounts of alloy components.

27. The process of claim 26, further comprising the step of subjecting the melt to high pressure conditions.

28. The process of claim 26, wherein the metal compounds are fused under conditions of microgravity.

29. The process of claim 28, wherein the melt undergoes a rapid solidification after fusion.

30. A mono-or pluripolar electrode from an alloy according to claim 1 for use in surgical procedures, wherein the electrode exhibits no capacitive impedance in relation to an electrode-tissue interface when coming in contact with biological tissue during electrosurgery.